

CHARGE NUMBER: 6902  
PROGRAM TITLE: BIOCHEMICAL SPECIAL INVESTIGATIONS  
PROJECT LEADER: A. H. WARFIELD  
PERIOD COVERED: SEPTEMBER 1-30, 1985  
DATE OF REPORT: OCTOBER 2, 1985

## I. CURING STUDIES

A. BRIGHT TOBACCO (1): As described in the August summary, this was a time-course study of the nitrate, nitrite, nitrate reductase activity (NRA), nicotine, minor alkaloids, and TSNA levels of Coker 319 tobacco during flue-curing, as well as a study of the effect of vitamin C and vitamin E on the TSNA levels produced. Most of the results from this study have been obtained, although the data have not been fully assessed as yet. The levels of nitrate found in the tobacco were extremely low. No NRA was found, and no nitrite was detected. Levels of TSNA which developed in the tobacco during curing were extremely low, reflecting the low nitrate levels. Further statements concerning the results will be withheld until a more complete analysis of the data can be made.

B. BURLEY TOBACCO (1): Approximately 300 burley plants were cut on 9/17/85 and transported from Appomattox, Va. to R&D on 9/19/85. Zero-time sampling was carried out, and the untreated plants were hung on racks on T-6 to air-cure. Treatment of 15 plants each with 3 separate solutions (or emulsions) containing ascorbyl palmitate, vitamin E acetate, and a mixture of sodium ascorbate and vitamin E acetate was carried out by spraying. In addition a sprayed control, containing only emulsifying agent, was prepared. After drying overnight, these plants were also placed in the racks to cure. Samples of the untreated tobacco are being taken for analysis each week. For treated plants, samples will be taken after one week of curing, and after curing is completed. None of the analytical data is available as yet.

C. V-446 TOBACCO (2): The V-446 tobacco (a nornicotine converter strain) was cut on 9/16/85 after being grown in the greenhouse by Roger Bass et al. (Project 2525). The plants were sampled for NRA as well as chemical analyses, and placed in the curing racks on T-6 on 9/17/85. Further sampling will be carried out weekly until curing is complete. Only a small percentage of the zero-time data has been obtained as of this time. The levels of nornicotine, however, are quite high as expected, even in the zero-time samples. Whether or not the experiment is successful will depend on the levels of nitrate found, since all data obtained thus far in these studies indicate that very low levels of nitrate do not give rise to production of TSNA's.

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II. REFERENCES

1. Warfield, A.H., Notebook 8196; Petri, D. Notebook 8006; Hansen, K., Notebook 8215; Yu, T. Notebook 8149. Contributions to this study have been made by all members of 6902, as well as several members of 6908 and 1901.
2. Warfield, A.H., Notebook 8196; Petri, D. Notebook 8006; Hansen, K., Notebook 8215; Yu, T. Notebook 8149.

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